IN THE CLAIMS

1. (Original) A method of finding a path from a start point to a target point, in multi-dimensional space, comprising:

(a) determining a plurality of points in a physical space, including a start point and an target point;

(b) computing, using a cost function, for said points an accumulated path cost from the start point to a point; representing a minimal cost path from the start point to the point with respect to an optimization criteria;

(c) computing for at least some of said points an estimated-cost-to-target from a point to the target point; and

(d) after computing said costs, determining at least one of a minimal path or a minimal path cost of a path from the start point to the target point in the physical space, wherein the determination is based on said accumulated path costs, and is substantially minimal with respect to the optimization criteria.

2. (Currently amended) A method according to claim 1, wherein determining a plurality of points comprises generating a discrete model of said physical ~~world~~space.

3. (Currently amended) A method according to claim 1~~ or claim 2~~, wherein the accumulated path cost at the target point approximates a minimal accumulated path cost of a path from the start point to the target point in the physical space.

4. (Currently amended) A method according to ~~any of~~ claim~~s 1-3~~1, wherein the minimal path determined is made of line segments and each line segment connects two of said points.

5. (Original) A method according to claim 4, wherein the minimal path cost has a lower or equal cost than any zigzag path from the start point to the target point, wherein the zigzag path connects a plurality of said points, only by straight line segments.

6. (Original) A method according to claim 1, wherein the minimal path determined is a continuous smooth line.

7. (Currently amended) A method according to ~~any of~~ claim~~s~~ 1~~-6~~, comprising repeatedly updating the accumulated path costs until a stopping criteria is satisfied.

8. (Currently amended) A method according to ~~any of claims 1-7~~claim 1, comprising selecting additional points based on said computed costs.

9. (Currently amended) A method according to ~~any of claims 1-8~~claim 1, wherein the accumulated path cost of a point is a function of a local cost of the point and an accumulated path cost of at least one neighbor point of the point.

10. (Currently amended) A method according to ~~any of claims 1-9~~claim 1, wherein computing said accumulated path cost comprises solving an Eikonal equation.

11. (Original) A method according to claim 10, wherein solving comprises employing a finite-difference approximation to an Eikonal equation.

12. (Currently amended) A method according to claim 10 ~~or claim 11~~ wherein computing said accumulated path cost at a point p is carried out by solving an Eikonal equation ||gradient(U(p))|| = L(p), where U(p) is an accumulated path cost function, L(p) is a local cost function, || || is a norm, and where the condition L(p)>0 holds.

13. (Original) A method according to claim 11 wherein computing said accumulated path cost (u) at a point P, in a three dimensional grid, is carried out by solving the equation:

$$L^2 = \max\left(u - U_{x-1,y,z}, u - U_{x+1,y,z}, 0\right)^2 +$$
$$\max\left(u - U_{x,y-1,z}, u - U_{x,y+1,z}, 0\right)^2 +$$
$$\max\left(u - U_{x,y,z-1}, u - U_{x,y,z+1}, 0\right)^2$$

where L is the local cost and the U's are accumulated path costs for neighbors of P.

14. (Currently amended) A method according to ~~any of claims 1-12~~claim 1, wherein computing said accumulated path cost is carried out using cost calculations suitable for a fast marching method.

15. (Currently amended) A method according to ~~any of the preceding claims~~claim 1, wherein the points are on a regular grid.

16. (Currently amended) A method according to ~~any of claims 1-14~~claim 1, wherein the points are on an irregular grid.

17. (Currently amended) A method according to ~~any of claims 1-16~~claim 1, wherein ~~the method examines~~said computing using a cost function comprises computing the cost function for grid points in a particular order.

18. (Currently amended) A method according to ~~any of claims 15-17~~claim 15, wherein neighbors of a point are one or more adjacent grid points to the point.

19. (Currently amended) A method according to ~~any of claims 1-18~~claim 1, wherein the points are selected ad-hoc and not according to an a priori grid.

20. (Currently amended) A method according to ~~any of the preceding claims~~claim 1, wherein the points are arranged as a graph.

21. (Currently amended) A method according to ~~any of claims 1-14~~claim 1, wherein neighbors of a point are one or more grid points at a certain distance or at a certain radius from the point.

22. (Currently amended) A method according to ~~any of the preceding claims~~claim 1, wherein determining a path is carried out by a gradient descent method applied on said points with calculated costs.

23. (Currently amended) A method according to ~~any of the preceding claims~~claim 1, wherein said estimated-cost--to- target is intentionally underestimated.

24. (Currently amended) A method according to ~~any of claims 1-22~~claim 1, wherein said estimated cost to target is intentionally overestimated.

25. (Currently amended) A method according to ~~any of claims 1-22~~claim 1, wherein said estimated cost to target is based on a Euclidian distance to said target.

26. (Currently amended) A method according to ~~any of the preceding claims~~claim 1, wherein a collection data structure is used for obtaining a point with the smallest cost, wherein adding or removing a value from the collection, and reordering the collection has a computational cost of order O(log M) or better, where M is the number of points in the collection.

27. (Original) A method according to claim 26, wherein a heap-type data structure is used for obtaining a point with the smallest cost.

28. (Currently amended) A method according to ~~any of the preceding claims~~claim 1, wherein points are categorized and points of different categories are processed differently.

29. (Currently amended) A method according ~~to any of the preceding claims~~claim 1, wherein costs of at least one point are updated after an initial calculation.

30. (Currently amended) A method according to ~~any of claims 1-28~~claim 1, wherein costs of no points are updated after an initial calculation.

31. (Currently amended) A method according to ~~any of the preceding claims~~claim 1, wherein (c) is applied less often than (b).

32. (Currently amended) A method according to ~~any of the preceding claims~~claim 1, wherein (c) causes delayed evaluation of less promising points.

33. (Original) A method according to claim 32, wherein said delayed evaluation causes a lack of evaluation of at least 40% of points on a grid including said plurality of points.